

What is claimed is:

1. A pharmaceutical composition comprising activated hemicellulose as an active ingredient in an amount effective to induce interleukin-12 and a pharmaceutically acceptable carrier.

2. The pharmaceutical composition as claimed in claim 1, which further contains components of fungal mycelium.

3. The pharmaceutical composition as claimed in claim 2, which further contains bacterial components of hemolytic streptococci.

4. A method for inducing interleukin-12 in vivo, comprising administering a pharmaceutical composition containing activated hemicellulose as an active ingredient and a pharmaceutically acceptable carrier.

5. The method for inducing interleukin-12 in vivo as claimed in Claim 4, wherein said pharmaceutical composition further contains components of fungal mycelium.

6. The method for inducing interleukin-12 in vivo as claimed in Claim 5, wherein said pharmaceutical composition further contains bacterial components of hemolytic streptococci.

7. A method for treating cancer, comprising administering a pharmaceutical composition containing activated hemicellulose (AHCC) as an active ingredient

and a pharmaceutically acceptable carrier by a single or simultaneous use in an amount which can induce interleukin-12 in vivo.

8. The method for treating cancer as claimed in Claim 7, wherein said pharmaceutical composition further contains components of fungal mycelium.

9. The method for treating cancer as claimed in Claim 8, wherein said pharmaceutical composition further contains bacterial components of hemolytic streptococci.

10. The pharmaceutical composition according to claim 1, further comprising shark cartilage.

11. The method according to claim 4, further comprising administering shark cartilage.

12. The pharmaceutical composition as claimed in claim 1, wherein the activated hemicellulose is selected from the group consisting of a  $\beta$ -D-glucan and an  $\alpha$ -D-glucan.

13. The pharmaceutical composition as claimed in claim 1, wherein the activated hemicellulose is a mixture of a  $\beta$ -D-glucan and an  $\alpha$ -D-glucan.

14. The method for inducing interleukin-12 in vivo as claimed in claim 4, wherein the activated hemicellulose is selected from the group consisting of a  $\beta$ -D-glucan and an  $\alpha$ -D-glucan.

15. The method for inducing interleukin-12 in vivo as claimed in claim 4, wherein the activated hemicellulose is a mixture of a  $\beta$ -D-glucan and an  $\alpha$ -D-glucan.

16. The method for treating cancer as claimed in claim 7, wherein the activated hemicellulose is selected from the group consisting of a  $\beta$ -D-glucan and an  $\alpha$ -D-glucan.

17. The method for treating cancer as claimed in claim 7, wherein the activated hemicellulose is a mixture of a  $\beta$ -D-glucan and an  $\alpha$ -D-glucan.